This product has been discontinued

Spec Sheet

Cisco UCS C210 M2 General-Purpose Rack-Mount Server

CISCO SYSTEMS
170 WEST TASMAN DR.
SAN JOSE, CA, 95134
WWW.CISCO.COM

PUBLICATION HISTORY

REV A.10 AUGUST 22, 2012

CONTENTS

OVERVIEW . . . 3
DETAILED VIEWS . . . 4
Chassis Front View . . . 4
Chassis Rear View . . . 5
BASE SERVER STANDARD CAPABILITIES and FEATURES . . . 6
CONFIGURING the SERVER . . . 8
STEP 1 VERIFY BASE SKU . . . 9
STEP 2 CHOOSE CPU(S) . . . 10
STEP 3 CHOOSE MEMORY . . . 13
STEP 4 CHOOSE RAID CONFIGURATION . . . 17
STEP 5 ORDER SAS EXPANDER AS NEEDED . . . 20
STEP 6 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES . . . 21
STEP 7 CHOOSE PCIe OPTION CARD(S) . . . 23
STEP 8 ORDER OPTIONAL NETWORK CARD ACCESSORIES . . . 25
STEP 9 CHOOSE OPTIONAL DVD-RW DRIVE . . . 28
STEP 10 ORDER OPTIONAL REDUNDANT POWER SUPPLY . . . 29
STEP 11 CHOOSE AC POWER CORDS . . . 30
STEP 12 ORDER TOOL-LESS OPTIONAL RAIL KIT . . . 33
STEP 13 ORDER OPTIONAL CABLE MANAGEMENT ARM . . . 34
STEP 14 ORDER A TRUSTED PLATFORM MODULE . . . 35
STEP 15 CHOOSE OPERATING SYSTEM . . . 36
STEP 16 CHOOSE OPERATING SYSTEM MEDIA KIT . . . 38
STEP 17 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE . . . 39
STEP 18 CHOOSE SERVICE and SUPPORT LEVEL . . . 40
OPTIONAL STEP - ORDER RACK(s) . . . 44
OPTIONAL STEP - ORDER PDU . . . 45
SUPPLEMENTAL MATERIAL . . . 46
CHASSIS . . . 46
CPUs and DIMMs . . . 47
Physical Layout . . . 47
Memory Population Rules . . . 48
Low-Voltage DIMM Considerations . . . 48
Recommended Configurations . . . 49
Configuration Samples . . . 50
SAS EXTENDER and SAS EXPANDER . . . 52
SAS Extender . . . 52
SAS Expander . . . 52
RACKS . . . 53
PDUs . . . 55
POWER SUPPLIES . . . 56
KVM CABLE . . . 57
Motherboard USB Port . . . 58
TECHNICAL SPECIFICATIONS . . . 59
Dimensions and Weight . . . 59
Power Specifications . . . 59
Environmental Specifications . . . 61
Compliance Requirements . . . 62

OVERVIEW

The Cisco® UCS C210 M2 server is a general-purpose, two-socket, two rack-unit (2RU) rack server that builds on the success of the UCS C210 M1 server. The UCS C210 M2 server (shown in *Figure 1*) extends the capabilities of the Cisco Unified Computing System™. The server uses Intel's latest Xeon 5600 Series multicore processors with 12 DIMM slots, 5 PCIe slots, embedded dual-port gigabit Ethernet controller, and up to 16 2.5-inch SAS/SATA hot-swappable hard disk drives (HDDs) or solid-state drives (SSDs).

Figure 1 Cisco UCS C210 M2 High-Density Rack Server

Front View

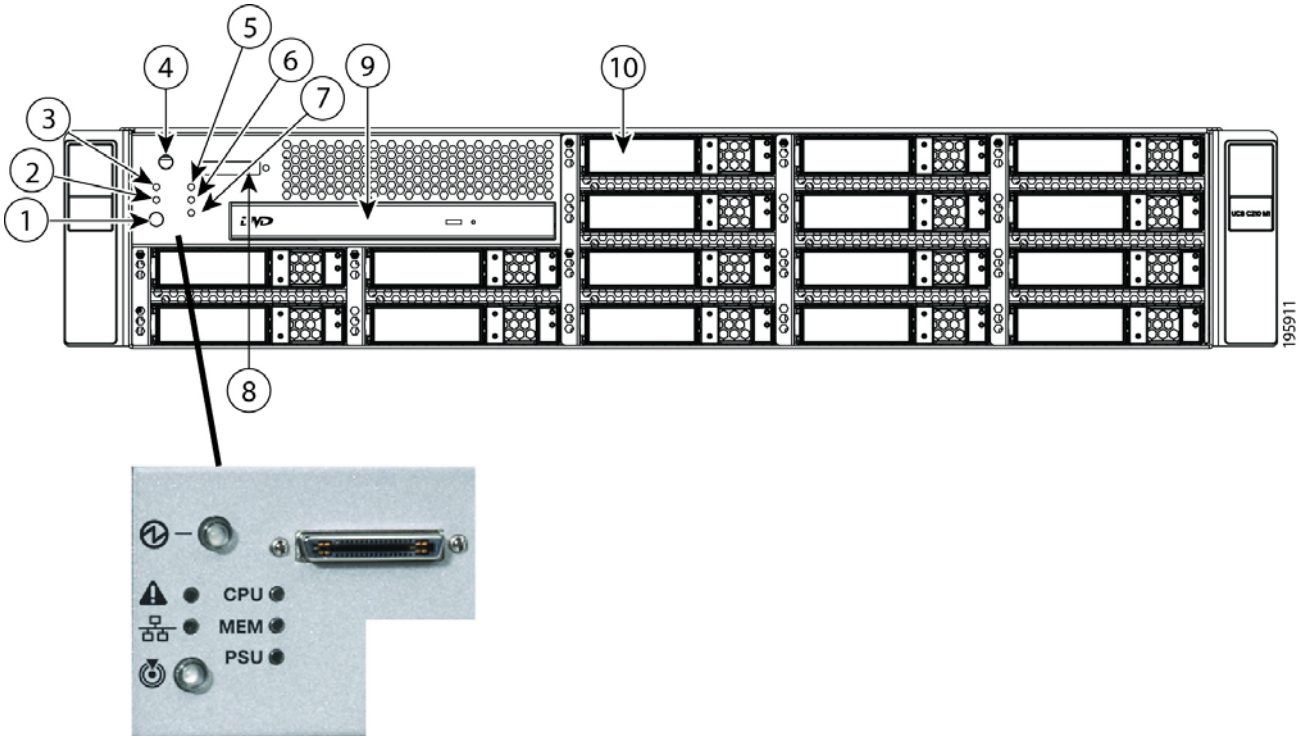
Rear View

DETAILED VIEWS

Chassis Front View

Figure 2 shows the Cisco UCS C210 M2 General-Purpose Rack Server.

Figure 2 Chassis Front View



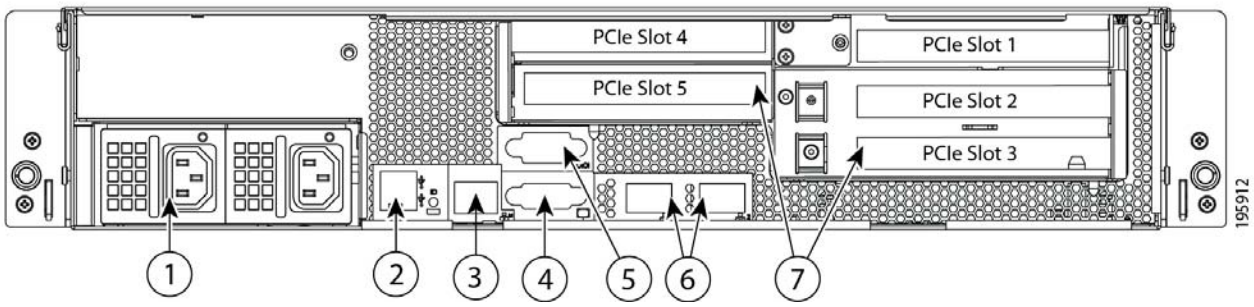
1	Locator LED/Locator Button	**6**	Memory fault LED
2	Network Activity LED	**7**	Power supply fault LED
3	System fault LED	**8**	Console connector (with supplied KVM cable, provides DB15 video, DB9 serial, and two USB 2.0 connectors)
4	Power button/Power status LED	**9**	DVD-RW drive, with dual-layer (DL) media support (optional)
5	CPU fault LED	**10**	Hard drives (up to 16 2.5” HDD)

For more information regarding the KVM cable connection, see **KVM CABLE on page 57**.

Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 Chassis Rear View



1	Power supply (up to 2)	**5**	Serial connector (DB9)
2	USB 2.0 connectors (2)	**6**	10/100/1000 Megabit Ethernet ports (2)
3	10/100 Ethernet management port (RJ-45)	**7**	Standard-profile PCIe card slots (five total) Slot 4 Slot 1 Slot 5 Slot 2 Slot 3 PCIe Slot Numbering (rear server view)
4	Video connector (DB15 VGA)		

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in **CONFIGURING the SERVER on page 8**.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	Up to two quad-core Intel® Xeon® 5500 or 5600 series processors
Chipset	Intel® 5520 (Tylersburg) chipset
Memory	12 slots for registered ECC DIMMS (up to 192 GB), supporting Intel SDDC
NIC	Embedded dual-port Intel 82576NS PCIe-based Gigabit Ethernet controller
Expansion slots	Five PCIe slots (on a riser card) ■ Slots 1 and 4 are full-height, full length, x8 lane, with a x16 connector ■ Slots 2, 3, and 5 are full-height, half-length, x8 lane, with a x16 connector
Storage controller	One of the following: ■ An onboard SATA RAID 0/1 controller integrated on motherboard (Intel ICH10R) that can control up to four SATA drives (only), or ■ An optional RAID mezzanine card: • LSI® 1064E 4-port controller mezzanine card (RAID levels 0, 1, or 1E) for up to 4 internal SAS or SATA drives with the factory default SAS Extender or the optional SAS Expander installed, or ■ One of these optional RAID PCIe plug-in cards (installed in PCIe slot #4): • LSI 6G MegaRAID SAS 9280-4i4e controller (RAID levels 0, 1, 5, 6, 10, 50, or 60 support) for up to 4 internal SAS or SATA drives (no mixing) with the factory default SAS Extender, plus external JBOD expansion, or • LSI 6G MegaRAID SAS 9261-8i controller (RAID levels 0, 1, 5, 6, 10, 50, or 60 support) for up to 8 internal SAS or SATA drives with the factory default SAS Extender, or up to 16 SAS or SATA drives with a SAS Expander installed
Video	■ 1280 x 1024 resolution ■ 32-bit color depth ■ 8 MB video memory
Internal storage devices	■ Up to 16 2.5-inch SAS or SATA hot-swappable hard disk drives (HDDs) or solid state drives (SSDs) ■ USB socket on motherboard

Capability/Feature	Description
Interfaces	■ Rear panel • One DB9 serial port connector • Two USB 2.0 port connectors • One DB15 VGA connector • Two RJ-45 10/100/1000 Ethernet port connectors • One RJ-45 10/100 Ethernet management port ■ Front panel • One KVM console connector
Front Panel	■ Optional DVD-RW optical drive, with dual-layer (DL) media support
Power subsystem	Up to two 650 W power supplies (N+1 or nonredundant configuration options)
Fans	Chassis: ■ Three 80-mm redundant fans Power supply: ■ Each power supply is equipped with a fan.
Integrated management processor	Cisco Integrated Management Controller (CIMC) (with integrated video, KVM redirection, Security Intelligence Operations (SIO), fan speed control, Platform Environment Control Interface (PECI), and voltage monitoring)

CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS C210 M2 General-Purpose Rack Server:

- STEP 1 VERIFY BASE SKU, page 9
- STEP 2 CHOOSE CPU(S), page 10
- STEP 3 CHOOSE MEMORY, page 13
- STEP 4 CHOOSE RAID CONFIGURATION, page 17
- STEP 5 ORDER SAS EXPANDER AS NEEDED, page 20
- STEP 6 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES, page 21
- STEP 7 CHOOSE PCIe OPTION CARD(S), page 23
- STEP 8 ORDER OPTIONAL NETWORK CARD ACCESSORIES, page 25
- STEP 9 CHOOSE OPTIONAL DVD-RW DRIVE, page 28
- STEP 10 ORDER OPTIONAL REDUNDANT POWER SUPPLY, page 29
- STEP 11 CHOOSE AC POWER CORDS, page 30
- STEP 12 ORDER TOOL-LESS OPTIONAL RAIL KIT, page 33
- STEP 13 ORDER OPTIONAL CABLE MANAGEMENT ARM, page 34
- STEP 14 ORDER A TRUSTED PLATFORM MODULE, page 35
- STEP 15 CHOOSE OPERATING SYSTEM, page 36
- STEP 16 CHOOSE OPERATING SYSTEM MEDIA KIT, page 38
- STEP 17 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE, page 39
- STEP 18 CHOOSE SERVICE and SUPPORT LEVEL, page 40
- OPTIONAL STEP - ORDER RACK(s) on page 44
- OPTIONAL STEP - ORDER PDU on page 45

STEP 1 VERIFY BASE SKU

Verify the product ID (PID) of the base server as shown in *Table 2*.

Table 2 PID of the Base C210 M2 Rack Server

Product ID (PID)	Description
R210-2121605W	UCS C210 M2 Srvr w/1PSU, w/o CPU, mem, HDD, DVD or PCIe card

The R210-2121605W base server:

- Includes one power supply.
- Does not include CPU, memory, hard disk drives (HDDs), Solid-State Drives (SSDs), plug-in PCIe cards, or optional DVD-RW drive.

NOTE: Use the steps on the following pages to configure the server with the components that you want to include.

STEP 2 CHOOSE CPU(S)

The standard CPU features are:

- Intel Xeon 5600-series (Westmere-EP) or Intel Xeon 5500-series (Nehalem) CPUs
- Intel 5520 chipset
- Cache size of 4, 8, or 12 MB

Choose CPUs

The available CPUs are listed in *Table 3*.

Table 3 Available CPUs: Intel Xeon Westmere-EP x56xx Family

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz)[1]
A01-X0117	X5675	3.06	95	12	6	6.4 GT/s	1333
A01-X0102	X5670	2.93	95	12	6	6.4 GT/s	1333
A01-X0105	X5650	2.66	95	12	6	6.4 GT/s	1333
A01-X0109	E5640	2.66	80	12	4	5.86 GT/s	1066
A01-X0120	E5649	2.53	80	12	6	5.86 GT/s	1333
UCS-CPU-E5645	E5645	2.40	80	12	6	5.86 GT/s	1333
A01-X0111	E5620	2.40	80	12	4	5.86 GT/s	1066
A01-X0106	L5640	2.26	60	4	6	5.86 GT/s	1333
A01-X0107	L5630	2.13	40	12	4	5.86 GT/s	1066
A01-X0123	E5606	2.13	80	8	4	4.8 GT/s	1066
A01-X0108	L5609	1.86	40	12	4	4.8 GT/s	1066

Notes . . .

1. If higher or lower speed DIMMs are selected than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock. For example:

   Selecting lower-speed DIMMs: If you use an X5650 CPU (which can support up to 1333-MHz DIMMs) with 1066-MHz DIMMs, the DIMMs will be clocked at the lower speed of 1066 MHz.

   Selecting higher-speed DIMMs: If you use 1333-MHz DIMMs with an E5620 CPU (which can support up to 1066-MHz DIMMs), the DIMMS will be clocked at the lower speed of 1066 MHz.

The available 5500-series CPUs are listed in *Table 4*.

Table 4 Available Intel CPUs: Xeon Nehalem x55xx Family

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz)[1]
N20-X00001	X5570	2.93	95	8	4	6.4 GT/s	1333
N20-X00006	X5550	2.66	95	8	4	6.4 GT/s	1333
N20-X00002	E5540	2.53	80	8	4	5.86 GT/s	1066
N20-X00003	E5520	2.26	80	8	4	5.86 GT/s	1066
N20-X00004	L5520	2.26	60	8	4	5.86 GT/s	1066
N20-X00009	E5504	2.00	80	4	4	4.8 GT/s	800
A01-X0113	E5506	2.13	80	4	4	4.8 GT/s	800

Notes . . .

1. If higher or lower speed DIMMs are selected than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock. For example:

   Selecting lower-speed DIMMs: if you use an X5570 CPU (which can support up to 1333-MHz DIMMs) with 1066-MHz DIMMs, the DIMMs will be clocked at the lower speed of 1066 MHz.

   Selecting higher-speed DIMMs: If you use 1333-MHz DIMMs with an E5506 CPU (which can support up to 800-MHz DIMMs), the DIMMS will be clocked at the lower speed of 800 MHz.

Approved Configurations

(1) Single-CPU configurations:

- Choose any one CPU listed in *Table 3 on page 10* or *Table 4 on page 11*.

(2) Two-CPU Configurations:

- Choose two identical CPUs from any one of the rows of *Table 3 on page 10* or *Table 4 on page 11*.

Caveats

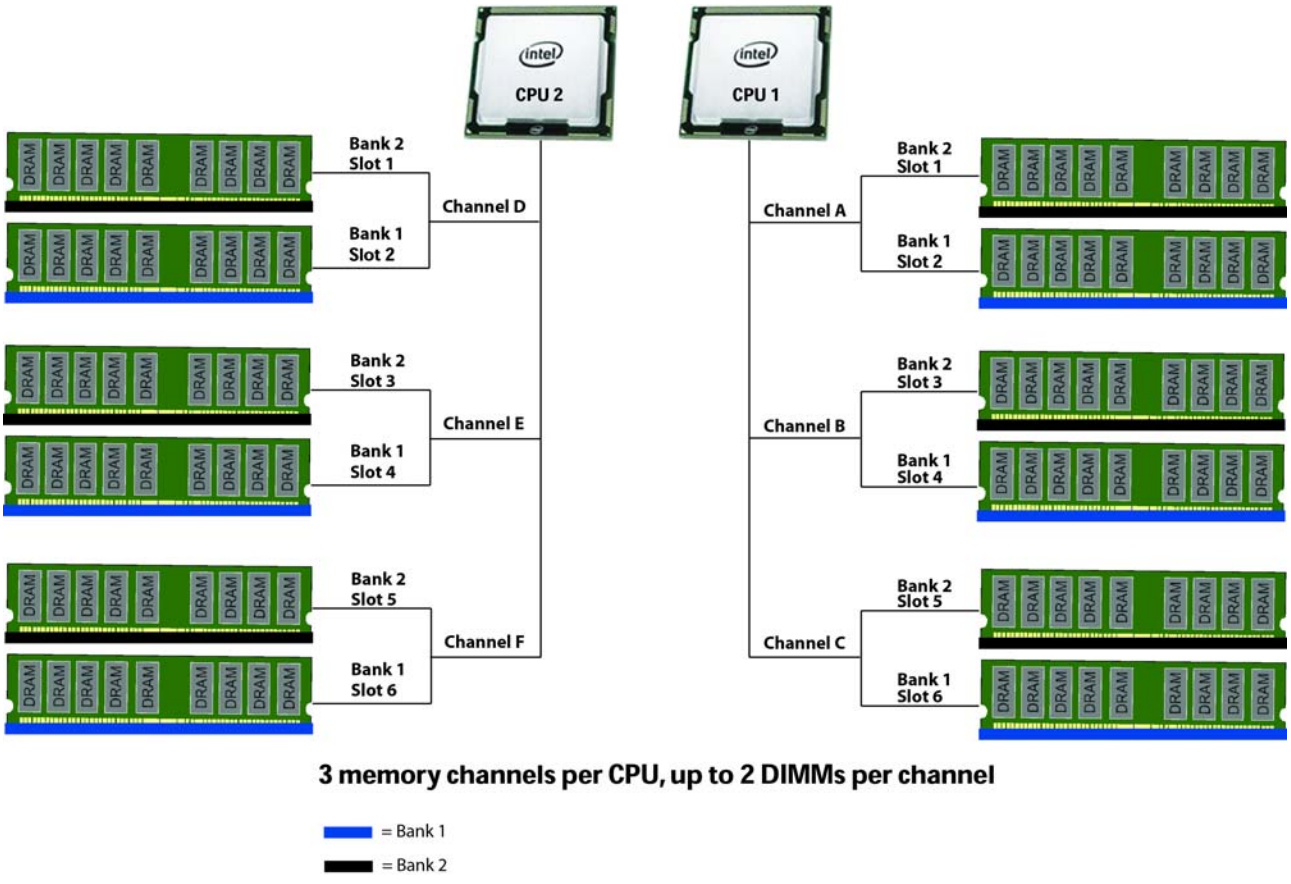
- You can select either one processor or two identical processors.
- For optimal performance, select DIMMs with the highest clock speed for a given processor (see *Table 5 on page 14*). If you select DIMMs whose speeds are lower or higher than that shown in the tables, suboptimal performance will result.

STEP 3 CHOOSE MEMORY

The standard memory features are:

- DIMMs
  - Clock speed: 800 MHz, 1066 MHz, or 1333 MHz
  - Ranks per DIMM: 1, 2, or 4
  - Operational voltage: single voltage (1.5 V) or dual voltage (1.35 V/1.5 V)
  - Registered
- DDR3 ECC registered DIMMs (RDIMMs), supporting Intel SDDC
- Memory is organized with three memory channels per CPU, with up to two DIMMs per channel (DPC), as shown in *Figure 4*.

Figure 4 C210 M2 Memory Organization



Choose DIMMs and Memory Mirroring

Choose the memory configuration and whether or not you want the memory mirroring option. The available memory DIMMs and mirroring option are listed in *Table 5*.

NOTE: When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two channels. If a memory read from one of the channels returns incorrect data due to an uncorrectable memory error, the system automatically retrieves the data from the other channel. A transient or soft error in one channel does not affect the mirrored data, and operation continues unless there is a simultaneous error in exactly the same location on a DIMM and its mirrored DIMM. Memory mirroring reduces the amount of memory available to the operating system by 50% because only one of the two populated channels provides data.

Table 5 Available DDR3 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks/ DIMM
DIMM Options			
UCS-MR-1X041RX-A	4GB DDR3-1333-MHz RDIMM/PC3-10600/1R/1.35v	1.35	1
UCS-MR-1X082RX-A	8GB DDR3-1333-MHz RDIMM/PC3-10600/2R/1.35v	1.35	2
UCS-MR-1X162RY-A	16GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.5v	1.35/1.5 V	4
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Approved Configurations

(1) 1-CPU configuration without memory mirroring:

- Choose from one to six DIMMs (note that there are six DIMM slots per CPU)

(2) 1-CPU configuration with memory mirroring:

- Choose either two or four DIMMs. The DIMMs will be placed by the factory as shown in the following table:

Number of DIMMs	DIMM Placement in Channels (Channel C is not used with memory mirroring)
2	1 DIMM in Channel A, 1 DIMM in Channel B
4	2 DIMMs in Channel A, 2 DIMMs in Channel B

- Choose the memory mirroring option (N01-MMIRROR) as shown in *Table 5 on page 14*.

(3) 2-CPU configuration without memory mirroring:

- Choose from 1 to 6 DIMMs per CPU (from 2 to 12 total DIMMs)

(4) 2-CPU configuration with memory mirroring:

- Choose 2, 4, 6, or 8 DIMMs per CPU. The DIMMs will be placed by the factory as shown in the following table:

Number of DIMMs	DIMM Placement (Channels C and F are not used with memory mirroring)	
2	CPU 1: 1 DIMM in Channel A	CPU 2: 1 DIMM in Channel D
4	CPU 1: 2 DIMMs in Channel A	CPU 2: 2 DIMMs in Channel D
6	CPU 1: 2 DIMMs in Channel A 1 DIMM in Channel B	CPU 2: 2 DIMMs in Channel D 1 DIMM in Channel E
8	CPU 1: 2 DIMMs in Channel A 2 DIMMs in Channel B	CPU 2: 2 DIMMs in Channel D 2 DIMMs in Channel E

- Choose the memory mirroring option (N01-MMIRROR) as shown in *Table 5 on page 14*.

NOTE: System performance is optimized when the DIMM memory type and the DIMM quantity is equal for both CPUs.

Caveats

- DIMM voltage:
  - You can mix dual voltage DIMMs (operate at either 1.5 V or 1.35 V) and single voltage DIMMs (operate at only 1.5 V).
  - Dual-voltage DIMMs can be operated in either of these modes:
    - Power Saving Mode at a maximum speed of 1066 MHz
    - Performance Mode at a maximum speed of 1333 MHz

    If you mix both types of DIMMs in your configuration, the server forces all DIMMs to operate in Performance Mode.
- Memory mirroring:

  If you choose the Memory RAS option, be aware that it is available only with an even number of memory channels. For example, if you choose six DIMMs and select RAS,

mirroring will go into effect on only two channels with two DIMMS per channel (you cannot implement RAS on three channels). In this case, two DIMMS would go unused.

NOTE: For memory mirroring, DIMM pairing across buses must be identical. If you only have two DIMMs, they need to be the same PID because you have one DIMM on each of two buses.

If you have four DIMMs in a 2-CPU system, for example, you can have two 4-GB and two 8-GB DIMMs. One 4-GB/8-GB DIMM pair would located on Channel A of CPU 1, and one 4-GB/8-GB DIMM pair would be located on Channel D of CPU 2.

If you have four DIMMs in a 1-CPU system, for example, you can have two 4-GB and two 8-GB DIMMs. One 4-GB/8-GB DIMM pair would located on Channel A of CPU 1, and one 4-GB/8-GB DIMM pair would be located on Channel B of CPU 1.

For more information regarding memory, see **CPUs and DIMMs on page 47**.

STEP 4 CHOOSE RAID CONFIGURATION

The base server motherboard comes with an integrated SATA RAID 0/1 controller, which supports up to 4 SATA drives only (the integrated controller does not support SAS drives). Therefore, a separate plug-in PCIe controller card is not required when ordering SATA drives and a RAID 0 or 1 configuration is desired.

You can use the built-in SATA RAID 0/1 controller as described in the preceding paragraph or you can instead choose to implement a RAID configuration by using the optional mezzanine card on the server motherboard or by using an optional plug-in PCIe RAID controller card.

Cisco can provide factory-configured RAID 0, 1, 1E, 5, 6, and 10 systems depending on the RAID implementation chosen and the number of drives ordered. Factory-configured RAID options are listed at the end of *Table 6*. Note that RAID levels 50 and 60 are supported on the 9280-4i4e and 9261-8i, but are not factory configurable.

Choose RAID Options

Choose one RAID controller, one RAID configuration option, and, if desired, the battery backup option listed in *Table 6*.

Table 6 Available RAID Options

Product ID (PID)	PID Description
RAID Controllers	
R2X0-ML002	LSI 1064E 4-port SAS 3.0G RAID Mezzanine Card ■ Installed on the mezzanine connector inside the UCS C210 M2 server ■ Supports up to four SAS or SATA drives with the factory default SAS Extender or the optional SAS Expander installed. You cannot mix SSD and HDD drive types. You cannot mix SAS and SATA drives. ■ No battery backup ■ Factory-configured RAID options: RAID 0, 1, or 1E
UCSC-RAID-C-4I4E	LSI MegaRAID SAS 9280-4i4e, four internal and four external ports ■ Takes up one of five available PCIe slots (must be installed in slot #4) ■ Supports up to 4 internal SAS or SATA drives (no mixing) plus external JBOD expansion with the factory default SAS Extender installed. You cannot mix SSD and HDD drive types ■ Battery backup option available (see the battery backup PID section in this table) ■ Factory-configured RAID options: RAID 0, 1, 5, 6, 10 (see the RAID PIDs section in this table)

Table 6 Available RAID Options *(continued)*

Product ID (PID)	PID Description
R2XX-PL003	LSI MegaRAID SAS 9261-8i (RAID 0, 1, 5, 6, 10) ■ Takes up one of five available PCIe slots (must be installed in slot #4) ■ Supports up to eight internal SAS or SATA drives with the factory default SAS Extender installed. You can mix SAS and SATA drive types, but you cannot mix HDD and SSD drive types. ■ Supports up to 16 internal SAS or SATA drives with the optional SAS Expander installed. You can mix SAS and SATA drive types, but you cannot mix HDD and SSD drive types. ■ Includes 512 MB of write cache ■ Battery backup option available (see the battery backup PID section in this table) ■ Factory-configured RAID options: RAID 0, 1, 5, 6, 10 (see the RAID PIDs section in this table)
RAID Battery Backup Option (not available with mezzanine card)	
R2XX-LBBU2	Battery Backup
RAID Configuration (note: Mezzanine card supports only RAID 0, 1, and 1E)	
R2XX-RAID0	Factory pre-configured RAID striping option Enable RAID 0 Setting. Requires a minimum of 1 hard drive.
R2XX-RAID1	Factory pre-configured RAID mirroring option Enable RAID 1 Setting. Requires exactly 2 drives, with same size, speed, capacity.
R2XX-RAID5	Factory pre-configured RAID option Enable RAID 5 Setting. Requires minimum 3 drives of same size, speed, capacity.
R2XX-RAID6	Factory pre-configured RAID option Enable RAID 6 Setting. Requires minimum 4 drives of same size, speed, capacity.
R2XX-RAID10	Factory pre-configured RAID option Enable RAID 10 Setting. Requires an even number of drives (minimum 4 drives) of same size, speed, capacity.

.

NOTE: No RAID option can be chosen if you have one of the following configurations:

- A mix of SAS and SATA drives
- No drives

Approved Configurations

(1) Integrated SATA RAID 0/1 controller

- Choose none of the options listed in *Table 6*. In this case, the integrated RAID 0/1 controller will be used.

(2) Optional RAID controller

- Choose one of the RAID controllers options (with or without battery backup) listed in *Table 6*.

(3) Optional RAID configuration

- Choose one of the RAID configuration options listed in *Table 6*.

NOTE: If an optional RAID configuration is not chosen, the disks will be configured as a JBOD.

Caveats

- The MegaRAID cards (LSI MegaRAID SAS 9280-4i4e or LSI MegaRAID SAS 9261-8i) must be installed in PCIe slot #4. Refer to *Figure 3 on page 5* for PCIe slot numbering.
- If you choose the mezzanine RAID controller card, you will still have all five PCIe slots available for adding optional cards.
- The two optional plug-in RAID controllers are each half-height PCIe cards. If you choose one of these optional cards, you will still have four slots available for adding optional PCIe cards.
- You can choose only one RAID controller (integrated controller, mezzanine card controller, or one plug-in PCIe controller).
- You can choose an optional RAID configuration (RAID 0, 1, 5, 6, or 10), which is pre-configured at the factory. If you do not choose a RAID configuration, the disks will be configured as a JBOD.

STEP 5 ORDER SAS EXPANDER AS NEEDED

You must order a SAS Expander if the system will have more than eight disk drives or you plan to upgrade to over eight disk drives in the future.

If you do not select a SAS Expander, the SAS Extender comes standard with the UCS C210 M2 server chassis. The SAS Extender supports up to eight disk drives. The SAS Extender option is not field upgradeable to a SAS Expander. Both the SAS Extender and SAS Expander, however, are field-replaceable. You can replace an extender or expander only with the same type of card.

If desired, select the SAS Expander listed in *Table 7*.

Table 7 SAS Expander

Product ID (PID)	Description
R210-SASXPAND	SAS Pass-Thru Expander (srvr requiring > 8 HDDs)

For more information about the SAS Expander and SAS Extender, see **SAS EXTENDER and SAS EXPANDER on page 52**.

STEP 6 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES

The standard disk drive features are:

- 2.5-inch small form factor
- Hot-pluggable
- Sled-mounted

Choose Drives

The available drives are listed in *Table 8*.

Table 8 Available Hot-Pluggable Sled-Mounted HDDs and SSDs

Product ID (PID)	PID Description	Drive Type	Capacity
HDDs			
A03-D146GC2	146GB 6 Gb SAS 15K RPM SFF	SAS	146 GB
A03-D300GA2	300 GB 6 Gb SAS 10K RPM SFF HDD	SAS	300 GB
UCS-HDD300GI2F105	300GB 6Gb SAS 15K RPM SFF HDD	SAS	300 GB
A03-D500GC3	500 GB 6 Gb SATA 7.2K RPM SFF	SATA	500 GB
A03-D600GA2	600 GB 6 Gb SAS 10K RPM SFF HDD	SAS	600 GB
UCS-HDD900GI2F106	900GB 6Gb SAS 10K RPM SFF HDD	SAS	900 GB
A03-D1TBSATA	1 TB 6 Gb SATA 7.2K RPM SFF HDD	SATA	1 TB
SSDs			
UCS-SSD100GI1F104	NEW 100GB SATA SSD SFF (STEC)	SATA	100 GB

Approved Configurations

(1) Integrated SATA RAID 0/1 controller

- Select up to 4 SATA (only) drives listed in *Table 8*. You cannot mix HDD and SDD SATA drive types.

(2) LSI 1064E 4-port SAS 6.0G RAID Mezzanine card RAID controller

- Select up to four SAS or SATA drives listed in *Table 8*. You cannot mix HDD and SSD drives. You cannot mix SAS and SATA drive types.

(3) LSI MegaRAID SAS 9280-4i4e RAID controller

- Select up to four SAS or SATA internal drives listed in *Table 8* for configurations with the factory-default extender. You cannot mix HDD and SSD drive types or SAS and SATA drives.

(4) LSI MegaRAID SAS 9261-8i RAID controller

- Select up to eight internal SAS or SATA drives listed in *Table 8*. You can mix SAS and SATA drives but you cannot mix HDD and SSD drive types. If you order the optional SAS Expander, the controller can support up to 16 internal drives.

Caveats

- If the integrated RAID controller on the server motherboard is used (no PCIe or mezzanine card controller selected), all the drives must be SATA.

A SAS Extender is not field-upgradable to a SAS Expander, so if you are configuring a system with eight or more drives or anticipate the system will implement more than eight drives in the future, make sure you order a SAS Expander. You can replace an extender or expander only with the same type of card.

STEP 7 CHOOSE PCIe OPTION CARD(S)

The standard PCIe card offerings are:

- Ethernet
- Fibre Channel
- iSCSI
- Virtual Interface Card (VIC)

Choose PCIe Option Cards

The available PCIe option cards are listed in *Table 9*.

Table 9 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Converged Network Adapters (CNA)		
N2XX-ACPCI01	Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps	Full
N2XX-AEPCI01	Emulex OneConnect OCe10102-F CNA 2-port 10Gbps	Half
UCSC-PCIE-BSFP	Broadcom 57712 Dual Port 10Gb SFP+ w/TOE iSCSI	Half
Network Interface Cards (NICs)		
N2XX-ABPCI02	Broadcom 57711 Dual Port 10GbE NIC w/TOE iSCSI	Half
N2XX-ABPCI03-M3	Broadcom 5709 Quad Port 1Gb w/TOE iSCSI for M3 Servers	Half
N2XX-ABPCI01-M3	Broadcom 5709 Dual Port 1Gb w/TOE iSCSI for M3 Servers	Half
N2XX-AQPCI01	Qlogic QLE 8152-CNA 2port 10Gb SFP+ Copper	Half
N2XX-AIPCI02	Intel Quad port GbE Controller (E1G44ETG1P20)	Half
N2XX-AIPCI01	Intel X520 Dual Port 10Gb SFP+ Adapter	Half
N2XX-AMPCI01	Mellanox ConnectX-2 EN with dual 10GbE SFP+ ports	Half
Host Bus Adapters (HBAs)		
N2XX-AEPCI03	Emulex LPe 11002 Dual Port 4Gb Fibre Channel HBA	Half
N2XX-AEPCI05	Emulex LPe 12002 Dual Port 8Gb Fibre Channel HBA	Half
N2XX-AQPCI03	Qlogic QLE2462 Dual Port 4Gb Fibre Channel HBA	Half
N2XX-AQPCI05	Qlogic QLE2562 Dual Port 8Gb Fibre Channel HBA	Half

Approved Configurations

(1) No RAID controller plug-in card

- If you did not choose a plug-in RAID controller (for example, you are using the mezzanine card or the interated RAID controller on the motherboard), you can select up to five PCIe option cards listed in *Table 9*.

(2) One RAID controller plug-in card

- If you selected a plug-in RAID controller, you can select up to four of the optional PCIe cards listed in *Table 9*.

NOTE: If a plug-in RAID controller card is installed, any optional PCIe card you select will be installed in one of the remaining four PCIe slots. You can install a maximum of one plug-in PCIe RAID controller card.

Caveats

- There are five PCIe slots. All are full-height. All of the PCIe adapter cards are half-height, with the exception of the Virtual Interface Card (VIC) (N2XX-ACPCI01), which is a full-height card.
  - If you selected a plug-in RAID controller in **STEP 4 CHOOSE RAID CONFIGURATION**, four slots remain available.
  - Only a single Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbp card may be installed and it must be installed in slot 1 or slot 2. Note, however, that if the server is running UCSM, only slot 1 is supported for the VIC card. See *Figure 3 on page 5* for slot numbering.

NOTE: If you are using Unified Computing System Manager (UCSM), the Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbp card must be installed only in PCIe slot 1.

  - All cards will fit in any slot.
- The MegaRAID cards (LSI MegaRAID SAS 9280-4i4e or LSI MegaRAID SAS 9261-8i) must be installed in PCIe slot #4. Refer to *Figure 3 on page 5* for PCIe slot numbering.
- To help ensure that your operating system is compatible with the card you have selected, please check the Hardware Compatibility List at this URL:

  http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

STEP 8 ORDER OPTIONAL NETWORK CARD ACCESSORIES

Copper twinax cables and SFP optical modules may be ordered to support the two-port network cards that are available with the server.

Choose Optional Twinax Cables

Copper twinax cables are listed in *Table 10*. You can choose cable lengths of 1, 3, 5, 7, or 10 meters. The two longer cables (7 and 10 meters) are active, which means that they contain active components within the SFP+ housing to improve signal quality.

Table 10 Available Twinax Cables

Product ID (PID)	PID Description
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable (1 M)
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable (3 M)
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable (5 M)
SFP-H10GB-ACU7M	10GBASE-CU SFP+ Cable (7 M)
SFP-H10GB-ACU10M	10GBASE-CU SFP+ Cable (10 M)

Approved Configurations

(1) Choose Up to Two Twinax Cables for Each Network Card Ordered

- You may choose one or two twinax cables for each network card ordered. The cables can be different lengths; however, you would normally order two cables of equal lengths to connect to the primary and redundant network switching equipment.

Caveats

The twinax cables listed in *Table 10* can be ordered only for the following PCIe cards:

- N2XX-ACPCI01 (Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps)
- UCS-PCIE-BSFP (Broadcom 57712)
- N2XX-ABPCI02 (Broadcom 57711)
- N2XX-AEPCI01 (Emulex OCe10102-F)
- N2XX-AIPCI01 (Intel Dual Port Ethernet X520)
- N2XX-AQPCI01 (Qlogic QLE 8152-CNA)

Choose Optional SFP Modules

Optical Cisco SFP+ modules are listed in *Table 11*.

Table 11 Available SFP Modules

Product ID (PID)	PID Description
SFP-10G-SR	10GBASE-SR SFP+ Module 850 nm, multimode, SR, 3.3V, LC connector, with Digital Optical Monitoring
DS-SFP-FC8G-SW	8 Gbit SFP+ Module 850 nm, multimode, SR, 3.3V, LC connector, with Digital Optical Monitoring

Approved Configurations

(1) Choose Up to Two SFP+ Modules for Each Network Card Ordered

- You may choose one or two SFP+ optical modules cables for each network card ordered. You would normally order two modules for connecting to the primary and redundant network switching equipment. With the SFP+ optical modules, you can use common fiber optic cables, widely available.

See *Figure 5 on page 27* for typical SFP+ and twinax connections to the network cards.

Caveats

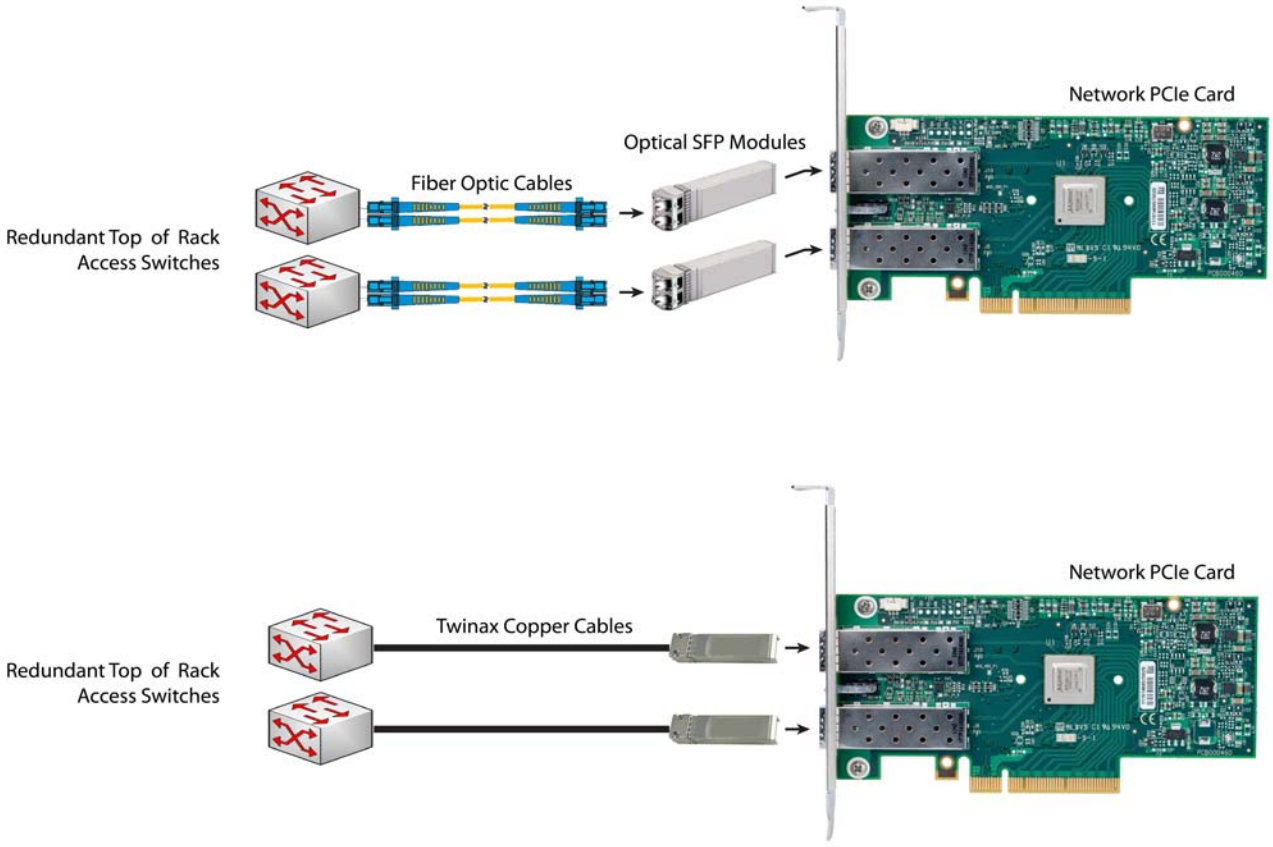
The SFP-10G-SR optical module listed in *Table 11* should be ordered only for the following PCIe cards, as they do not come by default with any optical modules:

- N2XX-ACPCI01 (Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps)
- UCSC-PCIE-BSFP (Broadcom 57712)
- N2XX-ABPCI02 (Broadcom 57711)
- N2XX-AEPCI01 (Emulex OCe10102-F)

The DS-SFP-FC8G-SW optical module listed in *Table 11* should be ordered only for the following PCIe cards, as they do not come by default with any optical modules:

- N2XX-AEPCI05 (Emulex LPe 12002 Dual Port 8Gb Fibre Channel HBA)

Figure 5 Network Card Connections



STEP 9 CHOOSE OPTIONAL DVD-RW DRIVE

An optional DVD-RW optical drive, with dual-layer (DL) media support, may be ordered. The drive is listed in *Table 12*.

Table 12 Available DVD-RW Drive

Product ID (PID)	PID Description
R210-ODVDRW	DVD-RW Drive for UCS C210 M2 Rack Servers

STEP 10 ORDER OPTIONAL REDUNDANT POWER SUPPLY

The C210 M2 server can accommodate two power supplies. Only one power supply is required. One 650 W power supply ships with the base server chassis. You can order an optional redundant power supply listed in *Table 13*s.

Table 13 Redundant Power Supply

Product ID (PID)	PID Description
R2X0-PSU2-650W-SB	650 W power supply, w/added 5A Standby for UCS C200 or C210

STEP 11 CHOOSE AC POWER CORDS

Select the appropriate AC power cords listed in *Table 14*. You may select a minimum of no power cords and a maximum of two power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 14 Available Power Cords

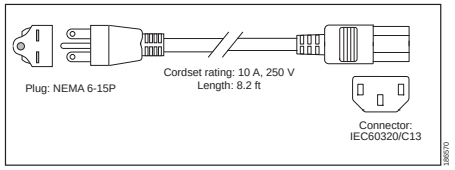
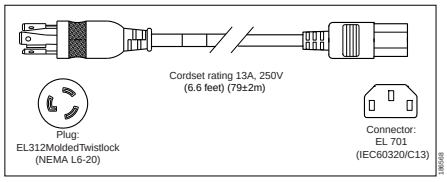
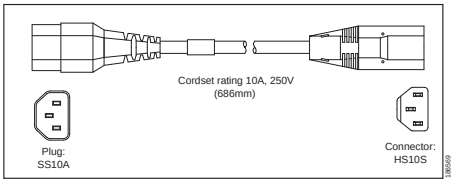
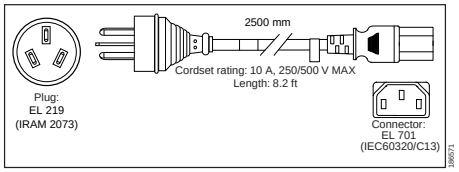
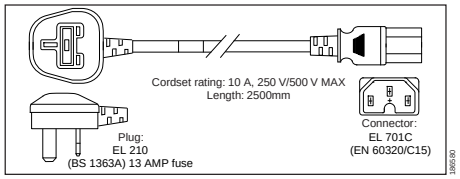
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	
CAB-AC-250V/13A	Power Cord, NEMA L6-20 250V/20A plug-IEC320/C13 receptacle, North America,	
CAB-C13-C14-JMPR	Power Cord, recessed receptacle AC power cord 27	
SFS-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	

Table 14 Available Power Cords *(continued)*

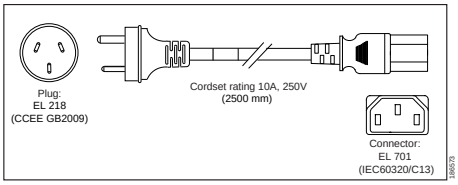
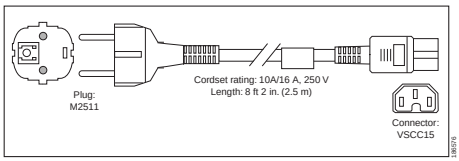
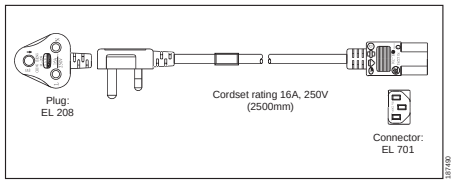
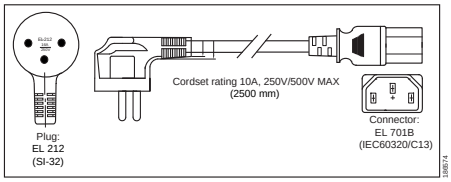
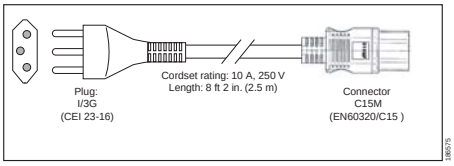
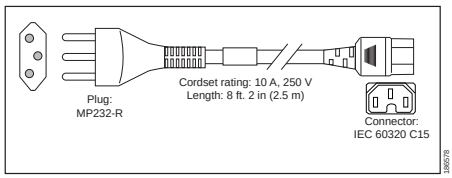
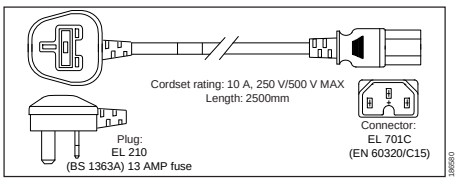
Product ID (PID)	PID Description	Images
SFS-250V-10A-CN	Power Cord, SFS, 250V, 10A, China	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	
SFS-250V-10A-ID	Power Cord, SFS, 250V, 10A, India	
SFS-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	

Table 14 Available Power Cords *(continued)*

Product ID (PID)	PID Description	Images
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	Image not available
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available

STEP 12 ORDER TOOL-LESS OPTIONAL RAIL KIT

A rail kit is not included with the Cisco UCS C210 M2 base server chassis, but you can order the tool-less rail kit listed in *Table 15*).

Table 15 Rail Kit

Product ID (PID)	PID Description
R2XX-G31032RAIL	Rail Kit for UCS 200, 210 Rack Servers

NOTE: This third-generation rail kit works in racks with square holes or 10-32 round holes and is shorter than the previous generation rail kit. The new R2XX-G31032RAIL measures 23.5 inches to 36 inches in length. By comparison, the previous version, R250-SLDRAIL, measured 27 inches to 37 inches in length.

See the section titled **OPTIONAL STEP - ORDER RACK(s) on page 44** for information about racks and rack equipment.

STEP 13 ORDER OPTIONAL CABLE MANAGEMENT ARM

The cable management arm hooks onto the right and left slide rails at the rear of the server and is used for cable management. You can order the cable management arm listed in *Table 16*.

Table 16 Cable Management Arm

Product ID (PID)	PID Description
R2XX-CMAG3-1032	Cable Mgmt Arm for R2XX-G31032RAIL for C200/C210

For more information about the cable management arm, see the *Cisco UCS C210 Installation and Service Guide* at this URL:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C210M1/install/C210M1.html

STEP 14 ORDER A TRUSTED PLATFORM MODULE

Trusted Platform Module (TPM) is a computer chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys. A TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy. Authentication (ensuring that the platform can prove that it is what it claims to be) and attestation (a process helping to prove that a platform is trustworthy and has not been breached) are necessary steps to ensure safer computing in all environments.

The TPM ordering information is listed in *Table 17*.

Table 17 Trusted Platform Module

Product ID (PID)	PID Description
R200-TPM1	Trusted Platform Module

STEP 15 CHOOSE OPERATING SYSTEM

Several operating systems are available from which to choose. Choose one of the operating systems listed in *Table 18*.

Table 18 Operating Systems

PID Description	Product ID (PID)
SUSE Linux Enterprise Server	
SLES-1A	SLES/1yr subscription/svcs required/0 media
SLES-3A	SLES/3yr subscription/svcs required/0 media
Red Hat Enterprise Linux	
RHEL-2S-1G-1A	RHEL/2 Socket/1 Guest/1Yr Svcs Required
RHEL-2S-1G-3A	RHEL/2 Socket/1 Guest/3Yr Svcs Required
RHEL-2S-4G-1A	RHEL/2 Socket/4 Guest/1Yr Svcs Required
RHEL-2S-4G-3A	RHEL/2 Socket/4 Guest/3Yr Svcs Required
RHEL-2S-UG-1A	RHEL/2 Socket/U Guest/1Yr Svcs Required
RHEL-2S-UG-3A	RHEL/2 Socket/U Guest/3Yr Svcs Required
RHEL-2S-1G-1A-RS	RHEL/2 Socket/1 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-1G-3A-RS	RHEL/2 Socket/1 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-3A-RS	RHEL/2 Socket/2 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-1A-RS	RHEL/2 Socket/4 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-1A-RS	RHEL/2 Socket/U Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-3A-RS	RHEL/2 Socket/U Guest/3Yr Subscription/Redhat Svcs Included
RHEL Add-Ons	
RHEL-HA-2S-1A	RHEL Option/High-Availability/2 Socket/1Yr Svcs Required
RHEL-RS-2S-1A	RHEL Option/Resilient w/Ha /2 Socket/1 Yr Svcs Required
RHEL-SFS-2S-1A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-HA-2S-3A	RHEL Option/High-Availability/2 Socket/3Yr Svcs Required
RHEL-RS-2S-3A	RHEL Option/Resilient Storage w/ HA /2 Socket/3 Yr Svcs Reqd
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/3 Yr Svcs Required
RHEL-HA-2S-1A-RS	RHEL Option/High-Availability/2 Socket/1Yr Redhat Svcs Incld
RHEL-RS-2S-1A-RS	RHEL Option/Resilient Storage/2 Socket/1 Yr Redhat Svcs Incl

Table 18 Operating Systems *(continued)*

PID Description	Product ID (PID)
RHEL-SFS-2S-1A-RS	RHEL Option/Scalable File Sys/2 Socket/1 Yr Redhat Svcs Incl
RHEL-HA-2S-3A-RS	RHEL Option/High-Availability/2 Socket/3Yr Redhat Svcs Incld
RHEL-RS-2S-3A-RS	RHEL Option/Resilient Storage/2 Socket/3 Yr Redhat Svcs Incl
RHEL-SFS-2S-3A-RS	RHEL Option/Scalable File Sys/2 Socket/3 Yr Redhat Svcs Incl
Windows Server	
MSWS-08-STHV	Windows Svr 2008 ST media (1-4CPU, 5CAL)
MSWS-08-ENHV	Windows Svr 2008 EN media (1-8CPU, 25CAL)
MSWS-08R2-STHV	Windows Svr 2008 ST media R2 ST (1-4CPU, 5CAL)
MSWS-08R2-ENHV	Windows Svr 2008 EN media R2 EN (1-8CPU, 25CAL)
MSWS-08R2-DCHV2S	Windows Svr 2008 R2-2 CPU-Data Center
MSWS-08R2-DCHV4S	Windows Svr 2008 R2-4 CPU-Data Center
VMWare Server	
VMW-VS-ADV-1A	VMware vSphere Advanced (1 CPU), 1yr 24x7 support
VMW-VS-ADV-3A	VMware vSphere Advanced (1 CPU), 3yr 24x7 support
VMW-VS-ENT-1A	VMware vSphere Enterprise (1 CPU), 1yr 24x7 support
VMW-VS-ENT-3A	VMware vSphere Enterprise (1 CPU), 3yr 24x7 support
VMW-VS-ENTP-1A	VMware vSphere Enterprise Plus (1 CPU), 1yr 24x7 support
VMW-VS-ENTP-3A	VMware vSphere Enterprise Plus (1 CPU), 3yr 24x7 support
VMW-VCS-1A	VMware vCenter Server Standard, 1yr support required
VMW-VCS-3A	VMware vCenter Server Standard, 3yr support required

STEP 16 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in *Table 19*.

Table 19 OS Media

Product ID (PID)	PID Description
RHEL-6	RHEL 6 Recovery Media Only (Multilingual)
SLES-11	SLES 11 media only (multilingual)
MSWS-08R2-STHV-RM	Windows Svr 2008 R2 ST (1-4CPU, 5CAL), Media
MSWS-08RS-ENHV-RM	Windows Svr 2008 R2 EN (1-8CPU, 25CAL), Media
MSWS-08R2-DCHV-RM	Windows Svr 2008 R2 DC (1-8CPU, 25CAL), Media

STEP 17 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE

You can select from a variety of value-added software listed in *Table 19*.

Table 20 Value Added Software

Product ID (PID)	PID Description
BMC-001	BMC BladeLogic CM for Virtualized Cisco Servers
BMC-001-COMP	BMC Blade Logic Compliance, VM Bundle, 2 Socket Server
BMC-002	BMC BladeLogic CM for Physical Cisco Servers
BMC-002-COMP	BMC Blade Logic Compliance, Single OS
BMC-012	BMC BPPM Per Server
VMW-VCS-1A	VMware vCenter Server Standard, 1yr 24x7 support
VMW-VCS-3A	VMware vCenter Server Standard, 3yr 24x7 support
N1K-VLEM-UCS-1	Cisco Nexus 1000V License PAK for 1 Virtual Ethernet module
N1K-CSK9-UCS-404	Cisco Nexus 1000V VSM Virtual Appliance Software

STEP 18 CHOOSE SERVICE and SUPPORT LEVEL

A variety of service options are available, as described in this section.

Unified Computing Warranty, No Contract

If you have noncritical implementations and choose to have no service contract, the following coverage is supplied:

- Three-year parts coverage.
- Next business day (NBD) parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- Downloads of BIOS, drivers, and firmware updates.
- UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

Unified Computing Mission Critical Service

This service delivers personalized technical account management, expedited technical support, and expert field support engineering for the Cisco Unified Computing System (UCS).

The Mission Critical Support Service provides a designated technical account manager (TAM) who acts as a strategic resource to help ensure that the unified computing environment runs at peak efficiency. If a problem arises that threatens business continuity, the TAM provides crisis management leadership, and your IT staff receives expedited access to Cisco's Technical Assistance Center (TAC).

Please note: This service has qualification criteria. Your company must have $1.2M of UCS equipment, 200 blades and a single location to qualify for this service level. Choose the desired service listed in *Table 21*.

Table 21 Unified Computing Mission Critical Service

Product ID (PID)	On Site?	Description
CON-UCM7-R210W	Yes	UC Mission Critical 24x7x4 On-site
CON-UCM8-R210W	Yes	UC Mission Critical 24x7x2 On-site

Unified Computing Support Service

For support of the entire Unified Computing System, Cisco offers the Cisco Unified Computing Support Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to Cisco Technical Assistance Center (TAC) is provided around the clock, from anywhere in the world.

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Unified Computing Support Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain

optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in *Table 22*.

Table 22 UCS Computing Support Service

Product ID (PID)	On Site?	Description
CON-UCS1-R210W	No	UC Support 8X5XNBD
CON-UCS2-R210W	No	UC Support 8X5X4
CON-UCS3-R210W	No	UC Support 24x7x4
CON-UCS4-R210W	No	UC Support 24x7x2
CON-UCS5-R210W	Yes	UC Support 8X5XNBD
CON-UCS6-R210W	Yes	UC Support 8X5X4
CON-UCS7-R210W	Yes	UC Support 24x7x4
CON-UCS8-R210W	Yes	UC Support 24x7x2

Unified Computing Warranty Plus Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Unified Computing Warranty Plus Service. You can choose from several levels of advanced parts replacement coverage, including onsite parts replacement in as little as two hours. Warranty Plus provides remote access any time to Cisco support professionals who can determine if a return materials authorization (RMA) is required. You can choose a service listed in *Table 23*.

Table 23 UCS Computing Warranty Plus Service

Product ID (PID)	On Site?	Description
CON-UCW2-R210W	No	UC Warranty Plus 8x5x4
CON-UCW3-R210W	No	UC Warranty Plus 24x7x4
CON-UCW4-R210W	No	UC Warranty Plus 24x7x2
CON-UCW5-R210W	Yes	UC Warranty Plus 8X5XNBD
CON-UCW6-R210W	Yes	UC Warranty Plus 8X5X4
CON-UCW7-R210W	Yes	UC Warranty Plus 24x7x4
CON-UCW8-R210W	Yes	UC Warranty Plus 24x7x2

Unified Computing Drive Retention Service

With the Cisco Unified Computing Drive Retention (UCDR) service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive. In exchange for a Cisco replacement drive, you provide a signed Certificate of Destruction (CoD) confirming that the drive has been removed from the system listed, is no longer in service, and has been destroyed.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The UCDR service enables you to retain your drives and ensures that the sensitive data on those drives is not compromised, thereby reducing the risk of any potential liabilities. This service also enables you to comply with regulatory, local, and federal requirements.

If your company has a need to control confidential, classified, sensitive, or proprietary data, you might want to consider one of the Drive Retention Services listed in *Table 24*.

NOTE: Cisco does not offer a certified drive destruction service as part of this service.

Table 24 Drive Retention Service Options

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
UCS Mission Critical Support Service With Drive Retention	UC CRIT DR	UCMD7	24x7x4 Onsite	CON-UCMD7-R210WSFF
		UCMD8	24x7x2 Onsite	CON-UCMD8-R210WSFF
UCS Support Service With Drive Retention	UC SUPP DR	UCSD1	8x5xNBD	CON-UCSD1-R210WSFF
		UCSD2	8x5x4	CON-UCSD2-R210WSFF
		UCSD3	24x7x4	CON-UCSD3-R210WSFF
		UCSD4	24x7x2	CON-UCSD4-R210WSFF
		UCSD5	8x5xNBD Onsite	CON-UCSD5-R210WSFF
		UCSD6	8x5x4 Onsite	CON-UCSD6-R210WSFF
		UCSD7	24x7x4 Onsite	CON-UCSD7-R210WSFF
		UCSD8	24x7x2 Onsite	CON-UCSD8-R210WSFF

Table 24 Drive Retention Service Options *(continued)*

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
UCS Warranty Plus With Drive Retention	UC PLUS DR	UCWD2	8x5x4	CON-UCWD2-R210WSFF
		UCWD3	24x7x4	CON-UCWD3-R210WSFF
		UCWD4	24x7x2	CON-UCWD4-R210WSFF
		UCWD5	8x5xNBD Onsite	CON-UCWD5-R210WSFF
		UCWD6	8x5x4 Onsite	CON-UCWD6-R210WSFF
		UCWD7	24x7x4 Onsite	CON-UCWD7-R210WSFF
		UCWD8	24x7x2 Onsite	CON-UCWD8-R210WSFF

For more service and support information, see the following URL:

http://www.cisco.com/en/US/services/ps2961/ps10312/ps10321/Cisco_UC_Warranty_Support_DS.pdf

For a complete listing of available services for Cisco Unified Computing System, see this URL:

http://www.cisco.com/en/US/products/ps10312/serv_group_home.html

OPTIONAL STEP - ORDER RACK(s)

The optional R42610 rack is available from Cisco for the C-Series servers, including the C210 M2 server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in *Table 25*. Racks are shipped separately from the C210 M2 server.

Table 25 Racks and Rack Options

Product ID (PID)	PID Description
RACK-UCS[1]	Cisco R42610 expansion rack, no side panels
RACK-UCS2[1]	Cisco R42610 standard rack, w/side panels
RACK-BLANK-001	Filler panels (qty 12), 1U, plastic, toolless
RACK-CBLMGT-001	Cable mgt D rings (qty 10), metal
RACK-CBLMGT-011	Cable mgt straps (qty 10), Velcro
RACK-FASTEN-001	Mounting screws (qty 100), M6
RACK-FASTEN-002	Cage nuts (qty 50), M6
RACK-JOIN-001	Rack joining kit

Notes . . .

1. Use these same base PIDs to order spare racks (available only as next-day replacements).

For more information about the R42610 rack, see **RACKS on page 53**.

OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including theC210 M2 server. This PDU is available in a zero rack unit (RU) style (see *Table 25*).

Table 26 PDU Options

Product ID (PID)	PID Description
RP208-30-2P-U-2	Zero RU PDU

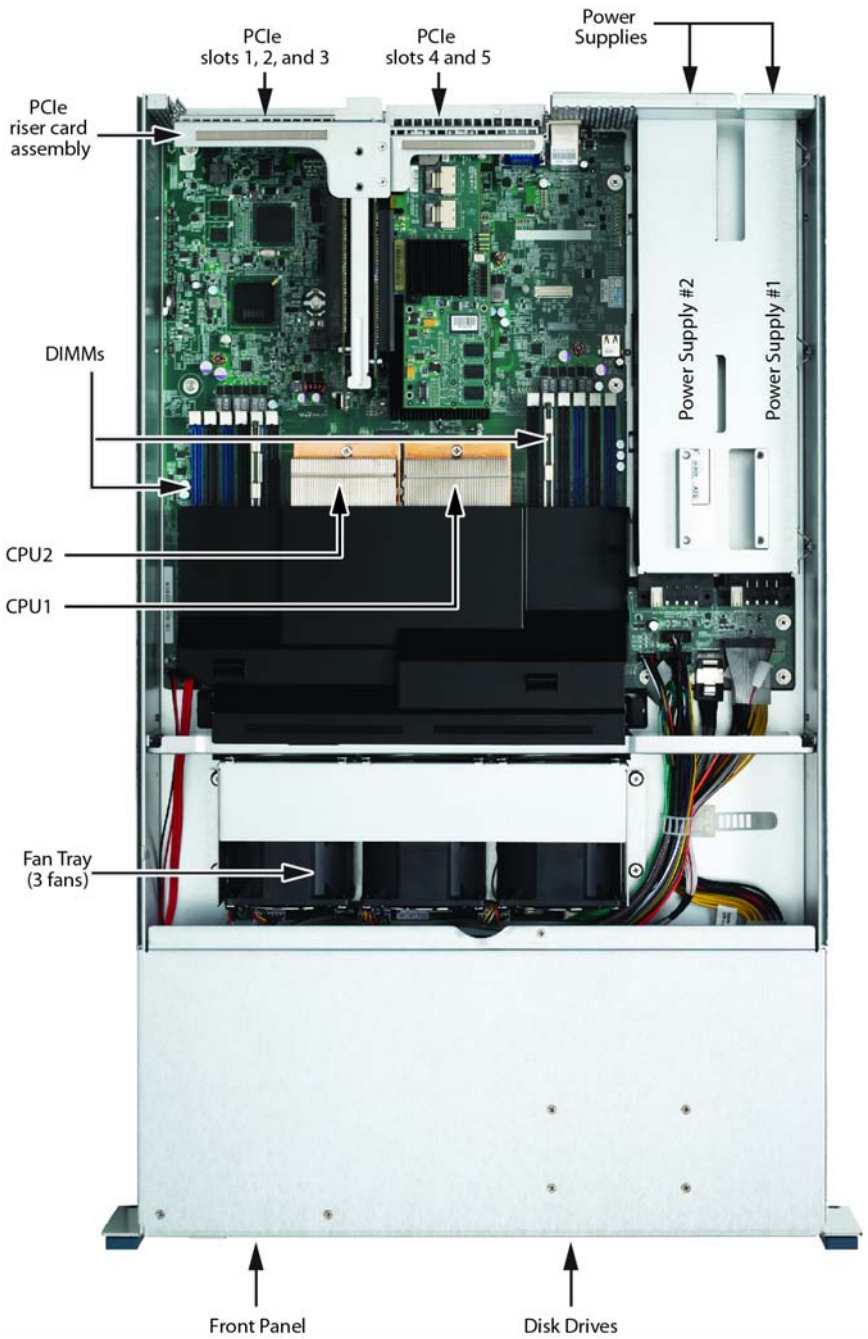
For more information about the PDU, see **PDUs on page 55**.

SUPPLEMENTAL MATERIAL

CHASSIS

An internal view of the C210 M2 chassis with the top cover removed is shown in *Figure 6*.

Figure 6 C210 M2 With Top Cover Removed



CPUs and DIMMs

Physical Layout

Each CPU has three DIMM channels:

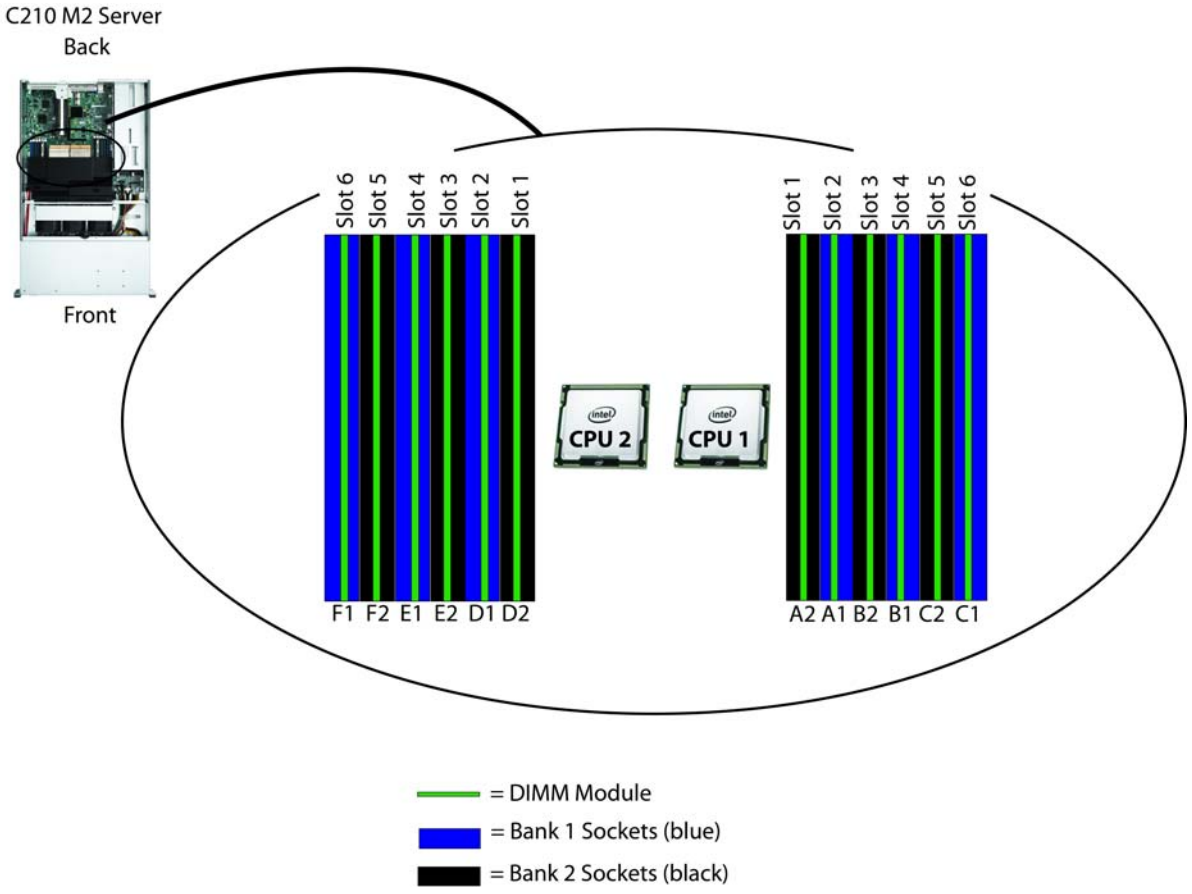
- CPU1 has channels A, B, and C.
- CPU2 has channels D, E, and F.

Each DIMM channel has two banks: Bank 1 and Bank 2. The blue-colored DIMM banks are for Bank 1 and the black-colored DIMM banks are for Bank 2.

As an example, DIMM slots A1, B1, and C1 belong to Bank 1, while A2, B2, and C2 belong to Bank 2.

Figure 7 shows how banks and channels are physically laid out on the motherboard. The DIMM slots on the right (channels A, B, and C) are associated with CPU1, while the DIMM slots on the left (channels D, E, and F) are associated with CPU2. The Bank 1 (blue) DIMM slots are always located farther away from a CPU than the corresponding Bank 2 (black) slots. Bank 1 slots are populated before Bank 2 slots. If only one DIMM is used for CPU 1, for example, it must be located in slot 2 (A1, channel A, bank 1); likewise, if only one DIMM is used for CPU 2, it must be installed in slot 2 (D1, channel D, bank 1).

Figure 7 CPU DIMM Channels and Banks



Memory Population Rules

When considering the memory configuration of your server, you should consider the following items:

- DIMMs within the server should all be the same type and speed. If you mix different DIMM types or DIMMs with different clock rates in the same server, such configurations are supported; however, these configurations may cause the system to operate at less than optimum levels. See *Table 27 on page 49* for recommended DIMM combinations.
- DIMMs can be used either in a one DIMM per Channel (1DPC) configuration or in a two DIMMs per Channel (2DPC) configuration.
- There are blue and black DIMM slots. Populate blue slots in a bank first.
- Low-voltage (1.35 V) DIMM and standard-voltage DIMM (1.5 V) can be mixed in the same server. Note that this causes the system BIOS to default to standard-voltage operation (Performance Mode). See *Low-Voltage DIMM Considerations*.

Low-Voltage DIMM Considerations

The C210 M2 server can be ordered with low-voltage (1.35 V) DIMMs or standard-voltage (1.5 V) DIMMs. Note the following considerations:

- Low-voltage DIMMs within the server must have the identical manufacturer, type, speed, and size.
- Low-voltage DIMMs and standard-voltage DIMMs can be mixed in the same server. Note that this causes the system BIOS to default to standard-voltage operation (Performance Mode). That is, the server cannot operate in Power Saving Mode unless all DIMMs are low-voltage DIMMs.
- CPUs that have a maximum memory frequency less than 1333 MHz support low-voltage DIMMs operating in Power Saving Mode only, and do not support Performance Mode.

Recommended Configurations

Table 27 lists the recommended DIMM combinations for 1- and 2-socket CPU systems. The DIMM combinations yielding the best performance are noted.

Table 27 Recommended DIMM Combinations

Total Memory Size	CPU Socket 1		CPU Socket 2		DIMM Max Clock rate	Total DIMMs in System
	DIMM Bank 1	DIMM Bank 2	DIMM Bank 1	DIMM Bank 2		
8 GB (1 CPU) 16 GB (2 CPUs)	1 x 8 GB	—	1 x 8 GB	—	1333 MHz	2
	2 x 4 GB	—	2 x 4 GB	—	1333 MHz	4
12 GB (1 CPU) 24 GB (2 CPUs)	3 x 4 GB	—	3 x 4 GB	—	1333 MHz	6[1]
16 GB (1 CPU) 32 GB (2 CPUs)	1 x 16 GB	—	1 x 16 GB	—	1066 MHz	2
	2 x 8 GB	—	2 x 8 GB	—	1333 MHz	4
	2 x 4 GB	2 x 4 GB	2 x 4 GB	2 x 4 GB	1333 MHz	8
24 GB (1 CPU) 48 GB (2 CPUs)	3 x 8 GB	—	3 x 8 GB	—	1333 MHz	6[1]
	3 x 4 GB	3 x 4 GB	3 x 4 GB	3 x 4 GB	1333 MHz	12[1]
32 GB (1 CPU) 64 GB (2 CPUs)	2 x 16 GB	—	2 x 16 GB	—	1066 MHz	4
	2 x 8 GB	2 x 8 GB	2 x 8 GB	2 x 8 GB	1333 MHz	8
36 GB (1 CPU) 72 GB (2 CPUs)	3 x 8 GB	3 x 4 GB	3 x 8 GB	3 x 4 GB	1333 MHz	12[1]
48 GB (1 CPU) 96 GB (2 CPUs)	3 x 16 GB	—	3 x 16 GB	—	1066 MHz	6
	3 x 8 GB	3 x 8 GB	3 x 8 GB	3 x 8 GB	1333 MHz	12[1]
60 GB (1 CPU) 120 GB (2 CPUs)	3 x 16 GB	3 x 4 GB	3 x 16 GB	3 x 4 GB	800 MHz	12
64 GB (1 CPU) 128 GB (2 CPUs)	2 x 16 GB	2 x 16 GB	2 x 16 GB	2 x 16 GB	800 MHz	8
72 GB (1 CPU) 144 GB (2 CPUs)	3 x 16 GB	3 x 8 GB	3 x 16 GB	3 x 8 GB	800 MHz	12
96 GB (1 CPU) 192 GB (2 CPUs)	3 x 16 GB	3 x 16 GB	3 x 16 GB	3 x 16 GB	800 MHz	12

Notes . . .

1. Best performance configuration.

Configuration Samples

The following figures show examples of how DIMMs are populated for 1-CPU and 2-CPU systems.

Figure 8 Example of 24-GB DIMM Memory Combinations with One CPU

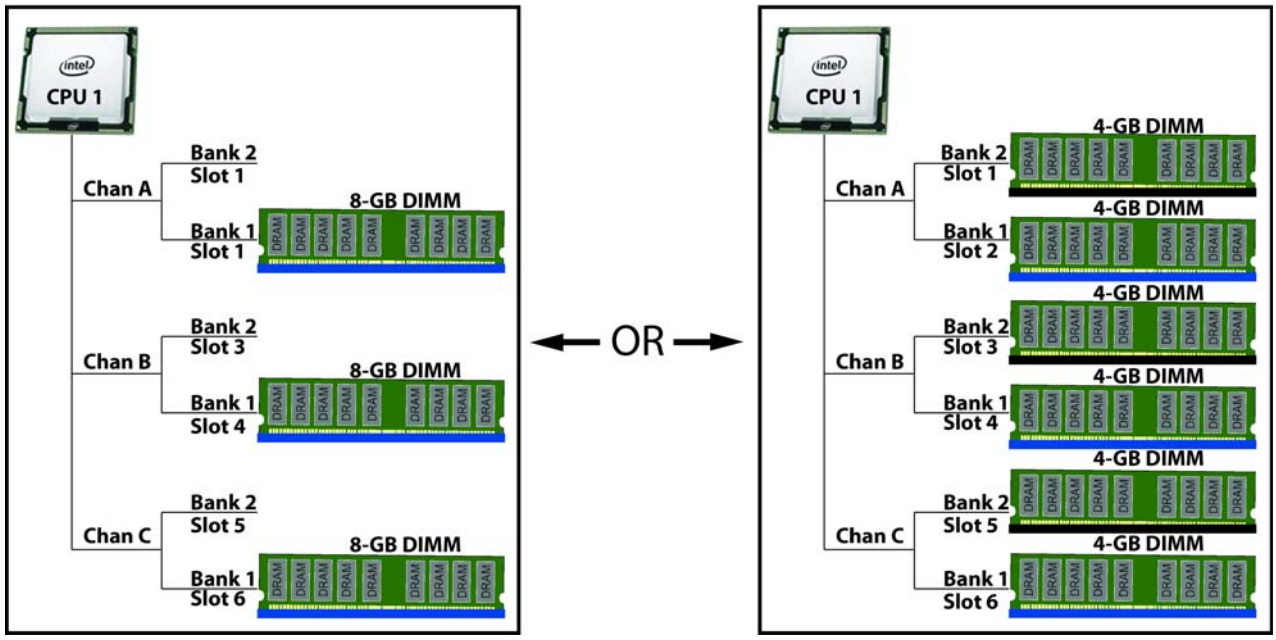
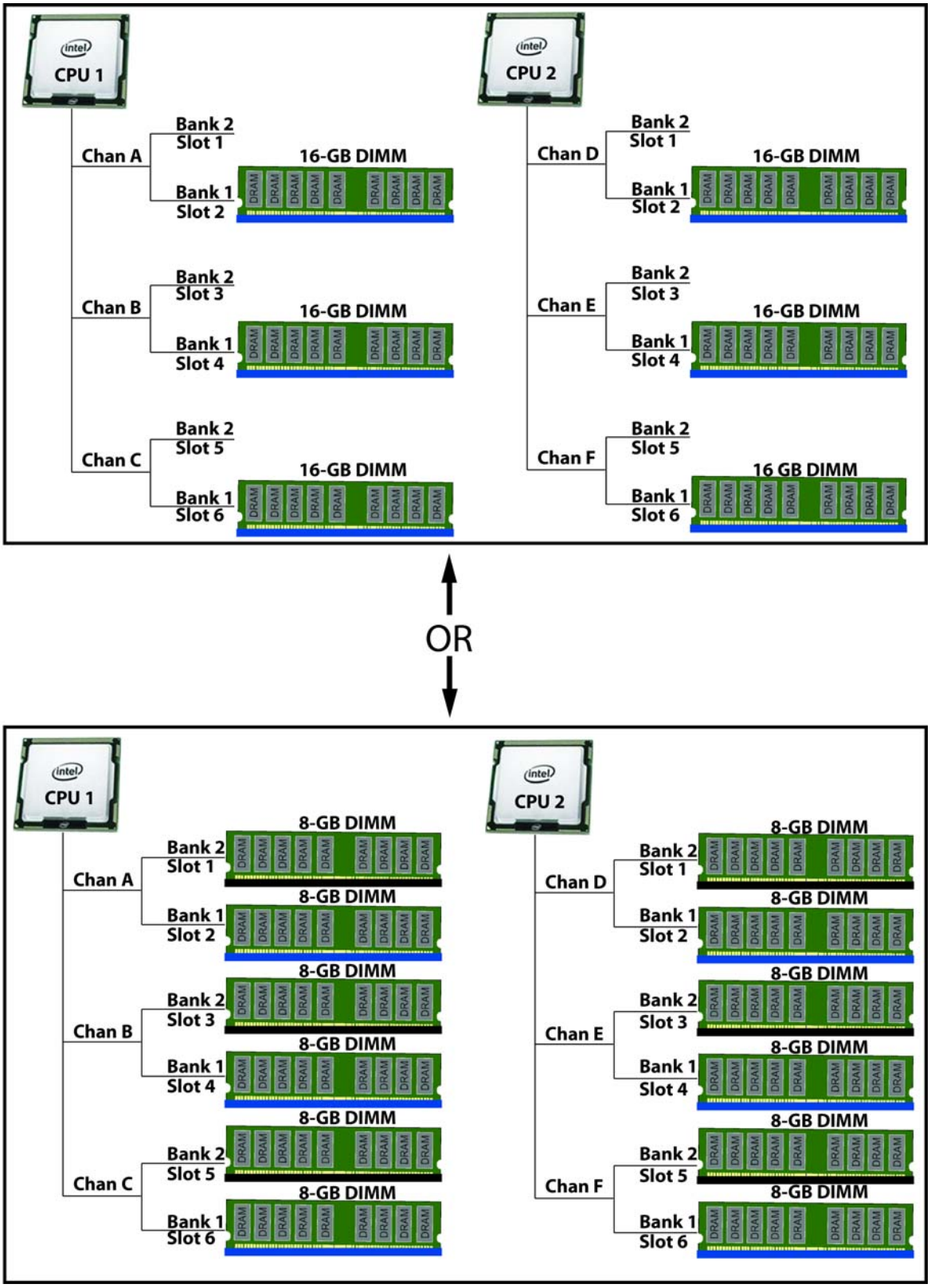


Figure 9 Example of 96 GB DIMM Memory Combinations with Two CPUs



SAS EXTENDER and SAS EXPANDER

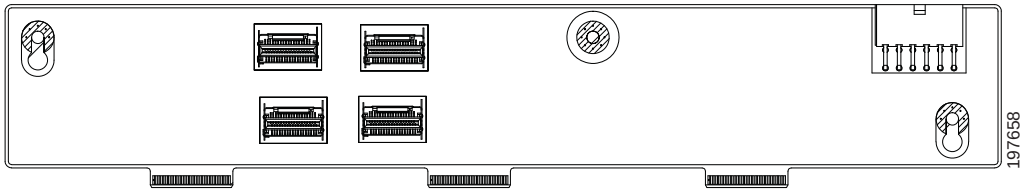
This server has two factory-configurable options for the hard drive backplane connection:

- Standard SAS extender, or
- Optional SAS expander

SAS Extender

The SAS extender (see *Figure 10*) is installed by default in the C210 M2 server.

Figure 10 SAS Extender



The extender implements four mini-SAS SFF-8087 cable connectors, each of which provides a connection for up to four drives.

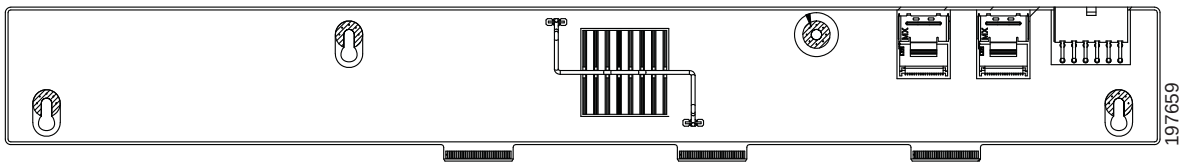
The extender supports connection for up to four drives when using the onboard RAID controller, the LSI 1064E mezzanine card, or the LSI MegaRAID SAS 9280-4i4e, and up to 8 drives when using the LSI MegaRAID SAS 9261-8i MegaRAID card.

NOTE: The SAS extender is field-replaceable, but you cannot upgrade from a SAS extender to a SAS expander in the field due to cable routing constraints. You can replace an extender or expander only with the same type of card.

SAS Expander

The SAS expander (see *Figure 11*) may be optionally ordered for the C210 M2 server.

Figure 11 SAS Expander



NOTE: The SAS expander is a factory-configurable option in this server. The expander is field-replaceable.

The SAS Expander has two mini-SAS SFF-8087 cable connectors. One connector provides connection for up to 16 drives, and the second connector provides redundancy.

RACKS

The Cisco R42610 rack (see *Figure 12*) is certified for Cisco UCS installation at customer sites and is suitable for the following equipment:

- Cisco UCS B-Series servers and fabric interconnects
- Cisco UCS C-Series and select Nexus switches

The rack is compatible with hardware designed for EIA-standard 19-inch racks. Rack specifications are listed in *Table 28*.

Table 28 Cisco R42610 Rack Specifications

Parameter	Standard Rack	Expansion Rack
Dimensions (H x W x D)	78.74 x 24 x 43.38 in. (2000 x 610 x 1102 mm)	78.74 x 23.58 x 43.38 in. (2000 x 599 x 1102 mm)
Dimensions (H x W x D) with packaging	89 x 33 x 47 in. (2261 x 838 x 1194 mm)	89 x 33 x 47 in. (2261 x 838 x 1194 mm)
Distance from front mounting rail to rear mounting rail	29.2 in. (741 mm)	29.2 in. (741 mm)
Weight	299.83 lb (136 kg)	231. 49 lb (105 kg)
Weight with packaging	354 lb (161 kg)	284 lb (129 kg)
Side panels included	Yes	No
Equipment mounting capacity	42RU	42RU
Static load capacity	2100 lb (954 kg)	2100 lb (954 kg)
Dynamic load capacity	Not applicable	Not applicable

NOTE: The AC input connector is an IEC 320 C-14 15 A/250 VAC power inlet.

Figure 12 Cisco R42610 Rack

Front view - door closed

Front view - door open

Front view - door removed

PDUs

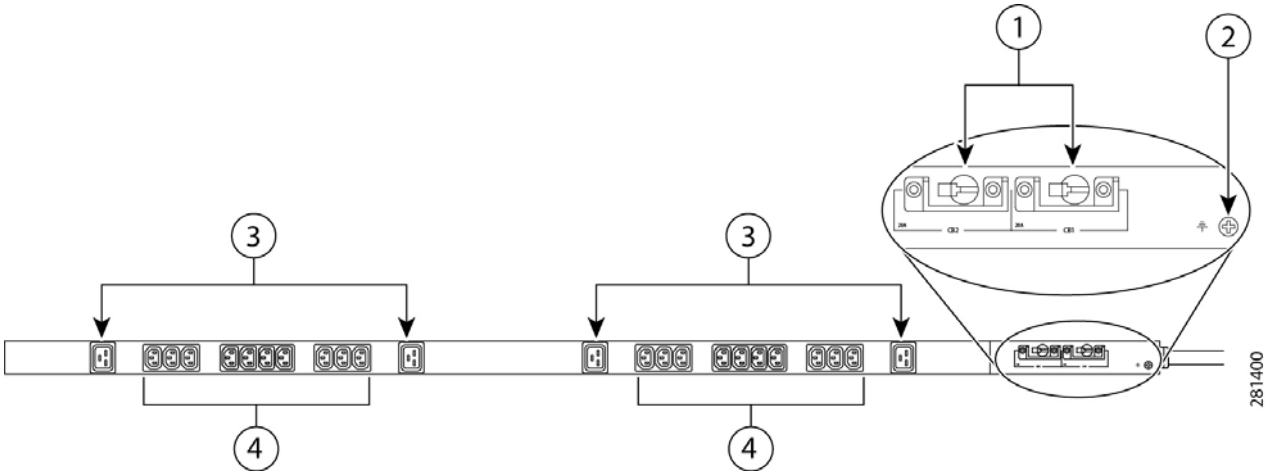
Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

Cisco RP Series PDU models distribute power to up to 24 outlets. The architecture organizes power distribution, simplifies cable management, and enables you to move, add, and change rack equipment without an electrician.

With a Cisco RP Series PDU in the rack, you can replace up to two dozen input power cords with just one. The fixed input cord connects to the power source from overhead or under-floor distribution. Your IT equipment is then powered by PDU outlets in the rack using short, easy-to-manage power cords.

The C-series severs accept the zero-rack-unit (0RU) PDU. See *Figure 13*).

Figure 13 Zero Rack Unit PDU (PID = RP208-30-2P-U-2)



1	Breakers	**3**	C19 plugs
2	Ground connection	**4**	C13 plugs

Cisco RP Series PDU models provide two 20-ampere (A) circuit breakers for groups of receptacles. The effects of a tripped circuit are limited to a receptacle group. Simply press a button to reset that circuit.

POWER SUPPLIES

The C210 M2 can accommodate one or two 650 W power supplies. A typical power supply is shown in *Figure 14*.

Figure 14 C210 M2 Power Supply

KVM CABLE

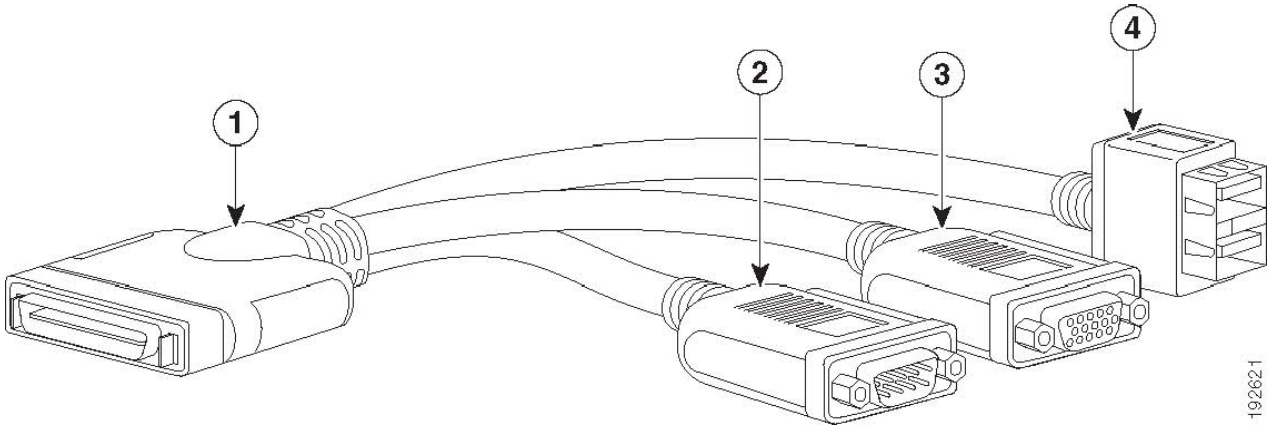
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in *Table 29*.

Table 29 KVM Cable

Product ID (PID)	PID Description
37-1016-01	KVM Cable

Figure 15 KVM Cable

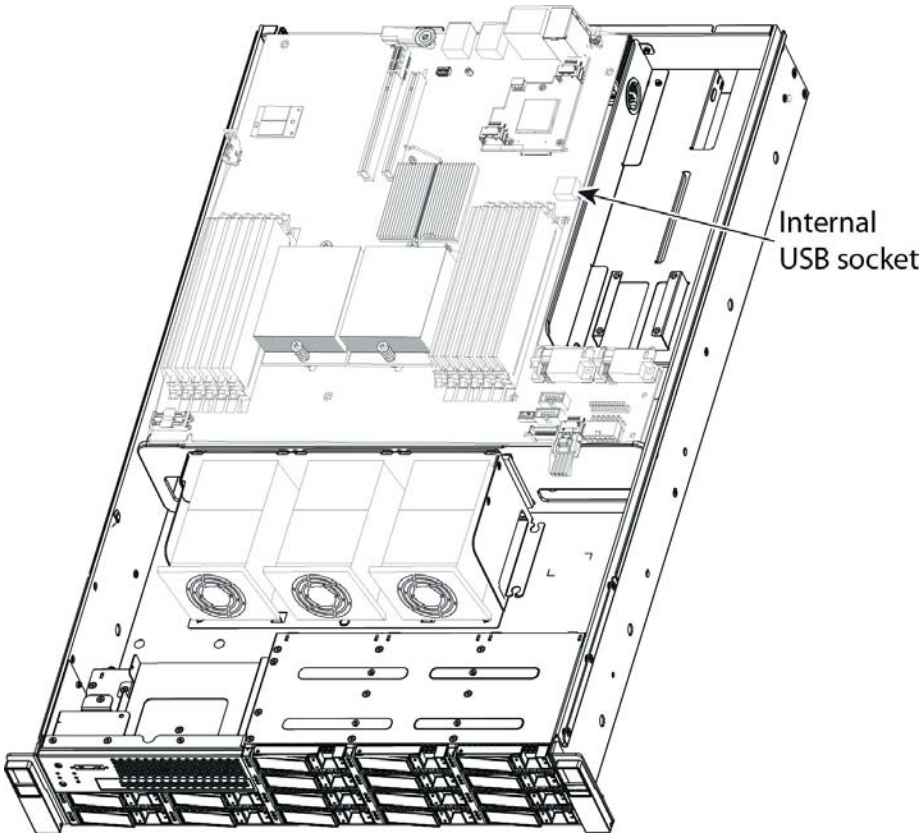


1	Connector (to server front panel)	**3**	VGA connector (for a monitor)
2	DB-9 serial connector	**4**	Two-port USB connector (for a mouse and keyboard)

Motherboard USB Port

The C210 M2 motherboard has a general-purpose USB socket, as shown in *Figure 16*.

Figure 16 Motherboard USB Port



TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 30 UCS C210 M2 Dimensions and Weight[1]

Parameter	Value
Height	3.45 in. (8.76 cm)
Width	17.39 in.(44.17 cm)
Depth	28.35 in. (72.01 cm)
Front Clearance	3 in. (7.62 cm)
Side Clearance	1 in. (2.54 cm)
Rear Clearance	6 in. (15.24 cm)
Weight	50.70 lbs (23 kg)*

Notes . . .

1. The system weight given here is an estimate for a fully configured system and will vary depending on the number of peripheral devices and power supplies.

Power Specifications

The general power specifications for the C210 M2 server are listed in *Table 31*.

Table 31 UCS C210 M2 Power Specifications

Description	Specification
AC input voltage	100 to 120 VAC nominal 200 to 240 VAC nominal (Range: 90 to 264 VAC)
AC input frequency	50 to 60 Hz nominal (Range: 47 to 63 Hz)
Maximum AC input current	8 A at 100 VAC
Maximum AC inrush current	30 A peak sub-cycle duration
Maximum output power for each power supply	650 W
Power supply output voltage	Main power: 12 VDC Standby Power: 5 VDC
Power supply efficiency	92% Peak, complies with 80Plus Gold Standard

NOTE: AC input connector is an IEC 320 C-14 15A/250VAC power inlet.

For configuration-specific power specifications, use the Cisco UCS Power Calculator at this URL: **http://www.cisco.com/assets/cdc_content_elements/flash/dataCenter/cisco_ucs_power_calculator/**.

As an example, using the calculator, we can determine the approximate power for the following C210 M2 server configuration:

- Voltage = 115 VAC
- Power Supplies = 2
- Processors = 2 CPUs (Intel Xeon 2.93 GHz X5670)
- Memory DIMMs = 6 x 16 GB
- Disk Drives = 16 x 1 TB
- PCIe Cards = 4
- PCIe RAID Card = 1

The resulting power calculations are:

- Idle Power = 263 W
- 50% Load Power = 419 W
- Max Power = 574 W

Environmental Specifications

The power specifications for the C210 M2 server are listed in *Table 32*.

Table 32 UCS C210 M2 Environmental Specifications

Parameter	Minimum
Temperature operating	10°C to 35°C (50°F to 95°F)
Temperature nonoperating	-40°C to 65°C (-40°F to 149°F)
Altitude operating	0 to 3,000 m (0 to 10,000 ft.); maximum ambient temperature decreases by 1° per 300 m
Humidity nonoperating	5 to 93%, noncondensing
Vibration nonoperating	2.2 Grms, 10 minutes per axis on each of the three axes
Shock operating	Half-sine 2 G, 11 ms pulse, 100 pulses in each direction, on each of the three axes
Shock nonoperating	Trapezoidal, 25 G, two drops on each of six faces Velocity = 175 inches per second on bottom face drop Velocity = 90 inches per second on the other five faces
Electrostatic discharge	Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage
Acoustic	Sound power: 54.7 dBA (5.7 Bels) at ambient temperature 23°C measured using the Dome Method GOST MsanPiN 001-96

Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in *Table 33*.

Table 33 UCS C-Series Regulatory Compliance Requirements

Parameter	Description
Regulatory Compliance	Products should comply with CE Markings per directives 2004/108/EC and 2006/95/EC
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943 2001
EMC - Emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A CNS13438 Class A
EMC - Immunity	EN55024 CISPR24 EN300386 KN24

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)